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Perkins Coie LLP
PO Box 1247
Seattle, WA 98111-1247

EXAMINER	
WALTHALL, ALLISON N	
ART UNIT	PAPER NUMBER
2629	

NOTIFICATION DATE	DELIVERY MODE
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

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Office Action Summary	Application No. 10/578,038	Applicant(s) KENT ET AL.	
	Examiner ALLISON WALTHALL	Art Unit 2629	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *30 December 2011*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ An election was made by the applicant in response to a restriction requirement set forth during the interview on _____; the restriction requirement and election have been incorporated into this action.

4)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

5)☒ Claim(s) *2-13,15,17,21-24,29,32-38,41,42,44,45,79,81,83-87 and 91-101* is/are pending in the application.

5a) Of the above claim(s) _____ is/are withdrawn from consideration.

6)☐ Claim(s) _____ is/are allowed.

7)☒ Claim(s) *2-13,15,17,21-24,29,32-38,41,42,45,79,81,83-87,91-93 and 95-101* is/are rejected.

8)☒ Claim(s) *44 and 94* is/are objected to.

9)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

10)☐ The specification is objected to by the Examiner.

11)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

12)☒ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.

4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .

5) ☐ Notice of Informal Patent Application

6) ☐ Other: _____.

DETAILED ACTION

Response to Amendment

1. The amendment filed December 30, 2011 has been entered. Claims 2-13, 15, 17, 21-24, 29, 32-38, 41, 42, 44, 45, 79, 81, 83-87, and 91-101 are pending.

Oath/Declaration

2. The oath or declaration is defective. A new oath or declaration in compliance with 37 CFR 1.67(a) identifying this application by application number and filing date is required. See MPEP §§ 602.01 and 602.02.

The oath or declaration is defective because: the oath indicates foreign priority is claimed under 35 U.S.C. 119 but does not list any foreign application proper under 119. The application listed is the PCT application that the present US application is a national stage entry of. Therefore the applicant may claim benefits for PCT/US2006/11757 under U.S.C. 371, not U.S.C. 119.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claims 2, 4, 12, 17, 34, 35, 38, 45, 79, 85, 91, 92, and 99-101 are rejected under 35 U.S.C. 103(a) as being unpatentable over Someya (US Patent 6,329,966) in view of Okazaki (US Patent 6,900,916), Dubin (US Publication 2003/0107802), Kimura (US Patent 6,798,649), Liu (US Patent 6,208,466) and Takuma (US Patent 5,343,119).

As to **claim 91**, Someya discloses a display device, comprising:

a display screen (25, Fig 7) comprising a fluorescent layer (6) that absorbs excitation light to emit visible light of different colors (red, green, and blue; see column 3, lines 34-45), a first layer (24) on a first side of the fluorescent layer operable to transmit the excitation light and to reflect the visible light (see column 4, lines 53-67 and Fig 8),

an array of lasers (11a, 11b, 11c) operable to produce laser beams of the excitation light, each laser beam carrying optical pulses that carry information of different colors (red green or blue) on a colored image to be generated by the emitted visible light of different colors by the fluorescent layer (see column 3, lines 1-9 and column 6, lines 33-36) ;

a scanning module (4) positioned to receive the laser beams from the lasers and to scan the laser beams across the display screen to enter the display screen to reach the fluorescent layer (see column 3, lines 19-33);

a feedback control mechanism (9) operable to control directions of the scanning laser beams from the scanning module (4) to adjust a timing of the optical pulses carried by each scanning laser beam, in response to the feedback control signal (signal from UV sensor) to correct an error in the spatial alignment (see column 3, lines 46-59).

Someya does not teach a Fresnel lens formed on the first side of the fluorescent layer to direct the excitation light incident to the display screen at different angles at different locations to enter the fluorescent layer with entry directions being approximately normal to the fluorescent layer; the first layer comprises a composite

sheet of a plurality of dielectric layers that are coextruded to have alternating high and low refractive indices to form an optical interference filter; each laser beam carries information of a plurality of colors; and an optical sensing unit positioned to receive a portion of light from the screen that is different in wavelength from the excitation light of the laser beams and operable to produce a feedback control signal indicating a spatial alignment of each scanning laser beam on the screen (i.e. Someya teaches an optical sensing unit receiving a portion of the excitation light of the laser beams to produce the feedback control signal).

Okazaki teaches a laser beam similar to that of Someya, but wherein a single laser beam carries information of a plurality of different colors (see Fig 1 and column 8, line 63-column 9, line 15). Therefore it would have been obvious to one having ordinary skill in the art at the time invention was made that each of the laser beams of Someya may be modfiied to carry information of a plurality of different colors, as taught by Okazaki, in order to excite adjacent pixels with a same scanning beam.

Dubin teaches a light beam projected at a screen (14, see Fig 1A and 1B), with a Fresnel lens (13) formed on the first side of the screen to direct the excitation light (from CRT projector) incident to the display screen at different angles at different locations to enter the fluorescent layer with entry directions being approximately normal to the screen (see [0006]). It would have been obvious to one having ordinary skill in the art at the time the invention was made to include a Fresnel lens as taught by Dubin in the display of Someya as modified by Okazaki, in order to increase the contrast of the screen.

Kimura teaches a first layer (126, Fig 19), similar to the filter 24 of Someya, operable to transmit excitation light (L) and to reflect visible light (M). Kimura teaches the first layer comprises a composite sheet of a plurality of dielectric layers, having alternating high and low refractive indices to form an optical interference filter (see column 1, line 41-column 2, line 6). It would have been obvious to one having ordinary skill in the art at the time the invention was made to provide a plurality of dielectric layers as taught by Kimura in the filter of Someya as modified by Okazaki and Dubin, in order to increase the utilization efficiency of fluorescent light (see Kimura column 2, lines 7-13).

However Kimura does not specifically teach the dielectric layers are coextruded. Liu teaches a plurality of dielectric layers, coextruded to have alternating high and low refractive indices (see column 5, line 65-column 6, line 15). It would have been obvious to one having ordinary skill in the art at the time the invention was made to provide coextruded materials as taught by Liu in the first layer of Someya as modified by Okazaki, Dubin, and Kimura, in order to have a desired reflection band profile.

Takuma teaches an optical sensing unit (2) positioned to receive a portion of light from the screen (light generated by the CRT) that is different in wavelength from the excitation light (electron beam) and operable to produce a feedback control signal (Si) indicating a spatial alignment of each scanning laser beam on the screen (see column 6, line 18-23 and column 9, lines 15-23). Therefore it would have been obvious to one having ordinary skill in the art at the time the invention was made to provide an optical sensing unit receiving light from the screen as taught by Takuma, instead of receiving

light from the excitation light as taught by Someya, in the device of Someya as modified by Okazaki, Dubin, Kimura, and Liu, in order to prevent change over timing of color signals so that a normal image can be displayed (column 5, lines 42-50).

Claim 79, is analyzed similar to claim 91 above.

As to **claim 2**, Someya teaches the fluorescent layer comprises a phosphor material (see column 3, lines 35-37).

As to **claim 4**, Someya teaches the phosphor material absorbs excitation light at an ultra violet wavelength (see column 3, lines 35-45).

As to **claim 12**, Someya teaches the fluorescent layer comprises a plurality of different of fluorescent materials which absorb the excitation light to emit light at different visible wavelengths (red, green, and blue, see column 3, lines 35-45).

As to **claim 17**, Kimura teaches the first layer is a multi-layer interference filter (see column 1, lines 47-52).

As to **claim 34**, Someya teaches the fluorescent layer is patterned to have different fluorescent regions with different fluorescence materials (see column 3, lines 35-37).

As to **claim 35**, Someya teaches the fluorescent layer is patterned to further comprise non-fluorescent regions (6d) without a fluorescent material to directly display light of the optical excitation beam (black matrix, see Fig 3).

As to **claim 38**, Someya teaches each fluorescent region (6a-6c) includes a boundary that is optically absorbent (6d is between each region, black is absorbent).

As to **claim 45**, Someya teaches the optical module includes a polygon to scan each beam in a first direction and a mirror to scan each beam in a second direction (see column 3, lines 19-30) .Okazaki teaches (Fig 2) the polygon (18) having reflective facets to rotate around a first rotation axis to scan each beam on the screen in a direction perpendicular to the first rotation axis (i.e. horizontal); a scanning mirror (16) to pivot around a second rotation axis perpendicular to the first rotation axis to scan each beam on the screen in a direction parallel to the first rotation axis (vertical); and a beam adjustment mechanism (14) operable to change at least one of a position and a beam pointing of the each beam along the first rotation axis to control a position of each beam on the screen along the first rotation axis (see column 5, lines 12-20). It would have been obvious to one having ordinary skill in the art at the time the invention was made to provide the polygon, scanning mirror, and beam adjustment mechanism taught by Okazaki in the device of Someya, in order to complete 2D scanning of the entire display.

As to **claim 85**, Someya teaches the fluorescent layer comprises different fluorescent regions that emit light of different colors (red, green, and blue, see column 3, lines 35-37), and a boundary of two adjacent different fluorescent regions is either optically reflective or optical absorbent (black is absorbent, see column 3, line 37).

As to **claim 92**, Someya teaches the fluorescent layer comprises different of fluorescent materials which absorb the excitation light to emit light at different visible wavelengths (red, green, and blue, see column 3, lines 42-45).

As to **claim 99**, Someya teaches a first reflector (30) and a second reflector (see column 5, lines 50-53) positioned in an optical path of the scanning laser beams between the display screen and the scanning module and configured to direct the scanning laser beams from the scanning module to the display screen in a folded optical path (see Fig 10 and column 5, lines 44-53).

As to **claims 100 and 101**, Takuma teaches the optical sensing unit (2) positioned to receive the portion of light from the screen that is different in wavelength from the excitation light of the laser beams includes one or more optical detectors that receive the visible light of different color emitted by the fluorescent layer (i.e. as modified above, where Takuma teaches detecting light emitted from the screen instead of the excitation light).

5. Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Someya in view of Okazaki, Dubin, Kimura, Liu, and Takuma, as applied to claim 2 above, and further in view of Ratna (US Patent 6,576,156).

As to **claim 3**, Someya, Okazaki, Dubin, Kimura, Liu, and Takuma teach the device as in claim 2, but do not teach the fluorescent materials comprise nanoscale phosphor grains. Ratna teaches using nanoscale phosphor grains (see column 7, lines 55-63). It would have been obvious to one having ordinary skill in the art at the time the invention was made to use nanoscale phosphor grains, as taught by Ratna, as the phosphors of Someya as modified Okazaki, Dubin, Kimura, Liu, and Takuma, in order to provide a high resolution display.

6. Claims 42 and 98 is rejected under 35 U.S.C. 103(a) as being unpatentable over Somyea in view of Okazaki, Dubin, Kimura, Liu, and Takuma, as applied to claim 79 above, and further in view of Gibeau (US Patent 5,715,021).

As to **claims 42 and 98**, Someya, Okazaki, Dubin, Kimura, Liu, and Takuma teach the device as in claims 79 and 91, but do not specifically teach the laser module comprises a modulation control which combines a pulse code modulation and a pulse width modulation to modulate the laser beam to produce image grey scales.

Gibeau (figure 1) teaches the laser module (200) comprises a modulation control which combines a pulse code modulation (see column 20, line 48-column 21, line 37) and a pulse width modulation (e.g. 228,230, 232) to modulate the laser beam to produce image grey scales (see column 4, line 62-column 5, line 12). It would have been obvious to one having ordinary skill in the art at the time the invention was made to use pulse code modulation and pulse width modulation for optical pulses of the beam as taught by Gibeau instead of acousto-optic modulation of the optical beam of Someya, because the laser diodes can be turned on and off at high rates (see Gibeau column 4, line 62-column 5, line 5 and Someya column 6, lines 15-21).

7. Claims 5-7, 9-11, 13, 21-24, 81, 86, 87, 93, and 95 are rejected under 35 U.S.C. 103(a) as being unpatentable over Someya in view of Okazaki, Dubin, Kimura, Liu, and Takuma as applied to claim 79 above, and further in view of Okajima (US Patent 5,473,396).

As to **claim 81**, Someya, Okazaki, Dubin, Kimura, Liu, and Takuma teach the device as in claim 79, but do not specifically teach the fluorescent layer comprises a plurality of parallel phosphor *stripes spaced from one another*. Okajima teaches a fluorescent layer which emits visible light when excited by UV rays, similar to Someya, wherein the fluorescent layer comprises a plurality parallel phosphor stripes spaced from one another (see Fig 3 and column 10, lines 48-67). It would have been obvious to one having ordinary skill in the art at the time the invention was made to use parallel stripes as taught by Okajima instead of dots in the device of Someya, with the predictable result of providing pixels comprising red, green, and blue.

As to **claims 21 and 95**, Okajima teaches the fluorescent layer comprises a plurality of parallel phosphor stripes, wherein at least three adjacent phosphor stripes are made of three different phosphors: a first phosphor to absorb the excitation light to emit light of a first color, a second phosphor to absorb the excitation light to emit light of a second color, and a third phosphor to absorb the excitation light to emit light of a third color (see column 10, line 60-column 11, line 7).

As to **claim 22**, Someya teaches the phosphors absorb excitation light at an ultraviolet wavelength (UV).

As to **claims 5 and 23**, Someya, Okazaki, Dubin, Kimura, Liu, and Takuma teach the device as in claim 2, but do not teach the phosphor material absorbs excitation light at a violet wavelength (see column 6, lines 28-31, wherein it is well known in the art that a violet wavelength is in a range of about 380nm-450nm). It would have been obvious to one having ordinary skill in the art at the time the invention was made to absorb

excitation light at a violet wavelength as taught by Okajima, in the device of Someya as modified by Okazaki, Dubin, Kimura, Liu, and Takuma with the predictable result of emitting visible light when excited by the excitation light.

As to **claims 6 and 24**, Okajima teaches the phosphor material absorbs excitation light at a wavelength less than 420 nm (see column 6, lines 28-31).

As to **claim 7**, Someya, Okazaki, Dubin, Kimura, Liu, and Takuma teach the device as in claim 2, but do not teach the fluorescent layer comprises a non- phosphor fluorescent material. Okajima teaches the fluorescent layer comprises a non-phosphor fluorescent material (i.e. any fluorescent material; see column 11, lines 4-7). As Okajima teaches any fluorescent material may be used, it would have been obvious to use non-phosphor fluorescent material instead of the phosphor dots of Someya, with the predictable result of emitting red, green, and blue visible light.

As to **claim 9**, Okajima teaches the non-phosphor fluorescent material absorbs excitation light at an ultra violet wavelength (UV, see abstract).

As to **claim 10**, Okajima teaches the non-phosphor fluorescent material absorbs excitation light at a violet wavelength (see column 6, lines 28-31, wherein it is well known in the art that a violet wavelength is in a range of about 380nm-450nm).

As to **claim 11**, Okajima teaches the non-phosphor fluorescent material absorbs excitation light at a wavelength less than 420 nm (see column 6, lines 28-31).

As to **claim 13**, Okajima teaches the fluorescent layer is patterned into parallel stripes, and wherein at least two adjacent stripes have at least two different fluorescent

materials that emit light at two different visible wavelengths, respectively (see column 11, lines 1-7).

As to **claim 86**, Someya, Okazaki, Dubin, Kimura, Liu, and Takuma teach the device as in claim 79, but do not teach the screen further comprises a second layer on a second side of the fluorescent layer to transmit visible light and to block the excitation light. Okajima teaches the screen further comprises a second layer on a second side of the fluorescent layer to transmit visible light and to block the excitation light (see column 6, lines 32-57). It would have been obvious to one having ordinary skill in the art at the time the invention was made to include a second layer on a second side of the fluorescent layer to transmit visible light and block excitation light as taught by Okajima in the device of Someya as modified by Okazaki, Dubin, Kimura, Liu, and Takuma in order to improve the light emission efficiency.

As to **claim 87**, Okajima teaches the second layer filter. Kimura teaches a similar filter which comprises a composite sheet of a plurality of dielectric layers (see column 1, line 41-column 2, line 6). Therefore as combined, it would have been obvious to one having ordinary skill in the art to provide the second layer as taught by Okajima as a composite sheet of a plurality of dielectric layers, as taught by Kimura to filter desired wavelengths.

As to **claim 93**, Someya, Okazaki, Dubin, Kimura, Liu, and Takuma teach the device as in claim 91, but do not teach the fluorescent layer is patterned into parallel stripes, wherein at least two adjacent stripes have at least two different fluorescent materials that emit light at two different visible wavelengths. Okajima teaches the

fluorescent layer is patterned into parallel stripes, and wherein at least two adjacent stripes have at least two different fluorescent materials that emit light at two different visible wavelengths, respectively (see column 11, lines 1-7). It would have been obvious to one having ordinary skill in the art at the time the invention was made to use parallel stripes as taught by Okajima instead of dots in the device of Someya, with the predictable result of providing pixels comprising red, green, and blue.

8. Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Someya in view of Okazaki, Dubin, Kimura, Liu, Takuma, and Okajima as applied to claim 7 above, and further in view of Beeson (US Publication 2005/0280785).

As to **claim 8**, Someya, Okazaki, Dubin, Kimura, Liu, Takuma, and Okajima teach the device as in claim 7, but do not teach the fluorescent materials comprise quantum dots. Beeson teaches fluorescent materials comprise quantum dots (see [0047]). It would have been obvious to one having ordinary skill in the art at the time the invention was made to use quantum dot materials for the phosphor dots of Someya, yielding the predictable result of converting ultraviolet light to colored light.

9. Claims 29 and 96 are rejected under 35 U.S.C. 103(a) as being unpatentable over Someya in view of Okazaki, Dubin, Kimura, Liu, Takuma, and Okajima as applied to claim 21 above, and further in view of Kaplan (US Patent 3,114,065).

As to **claims 29 and 96**, Someya, Okazaki, Dubin, Kimura, Liu, Takuma, and Okajima teach the device as in claims 21 and 95, but do not teach a first optical

absorbent material mixed in the first phosphor that absorbs light of the second and third colors and transmits light of the first color; a second optical absorbent material mixed in the second phosphor that absorbs light of the first and third colors and transmits light of the second color; and a third optical absorbent material mixed in the third phosphor that absorbs light of the first and second colors and transmits light of the third color.

Kaplan teaches a first optical absorbent material mixed in the first phosphor that absorbs light of the second and third colors and transmits light of the first color;
a second optical absorbent material mixed in the second phosphor that absorbs light of the first and third colors and transmits light of the second color; and
a third optical absorbent material mixed in the third phosphor that absorbs light of the first and second colors and transmits light of the third color (i.e. the filter and luminescent materials may be intermixed with each other; see column 1, line 63-column 2, line 49). It would have been obvious to one having ordinary skill in the art at the time the invention was made to provide optically absorbent materials mixed in the phosphors as taught by Kaplan, in the device of Someya as modified by Okazaki, Dubin, Kimura, Liu, Takuma, and Okajima, in order to improve the contrast of the display.

10. Claims 36, 41, and 97 are rejected under 35 U.S.C. 103(a) as being unpatentable over Someya in view of Okazaki, Dubin, Kimura, Liu, and Takuma, as applied to claims 34 and 79 above, and further in view of Okajima and Kaplan.

As to **claim 36**, Someya, Okazaki, Dubin, Kimura, Liu, and Takuma, teach the device as in claim 34, but do not teach the screen further comprises: a second layer on

a second side of the fluorescent layer to transmit the visible light and to block the excitation light; and a contrast enhancing layer formed over the second layer to comprise a plurality different filtering regions that spatially match the fluorescent regions, wherein each filtering region transmits light of a color that is emitted by a corresponding matching fluorescent region and blocks light of other colors.

Okajima teaches the screen further comprises a second layer on a second side of the fluorescent layer to transmit visible light and to block the excitation light (see column 6, lines 32-57). It would have been obvious to one having ordinary skill in the art at the time the invention was made to include a second layer on a second side of the fluorescent layer to transmit visible light and block excitation light as taught by Okajima in the device of Someya as modified by Okazaki, Dubin, Kimura, Liu, and Takuma, in order to improve the light emission efficiency.

Kaplan teaches a contrast enhancing layer to comprise a plurality different filtering regions that spatially match the fluorescent regions, wherein each filtering region transmits light of a color that is emitted by a corresponding matching fluorescent region and blocks light of other colors (see column 1, line 63-column 2, line 49). It would have been obvious to one having ordinary skill in the art at the time the invention was made to provide the filter of Kaplan, over the second layer of Someya as modified by Okazaki, Dubin, Kimura, Liu, Takuma, and Okajima, in order to improve the contrast of the display.

As to **claims 41 and 97**, Someya, Okazaki, Dubin, Kimura, Liu, and Takuma teach the device as in claims 79 and 91, but do not teach the fluorescent layer

comprises a plurality of parallel fluorescent *stripes*, each fluorescent stripe to absorb the excitation light to emit light of a designated color, the device further comprising: a contrast enhancing layer positioned relative to the fluorescent layer so that the fluorescent layer is placed at a position between the contrast enhancing layer and the first layer, wherein the contrast enhancing layer comprises a plurality of different filtering stripes that spatially match the fluorescent stripes, where each filtering stripe transmits light of a color that is emitted by a corresponding matching fluorescent stripe and blocks light of other colors.

Okajima teaches the fluorescent layer comprises a plurality of parallel fluorescent *stripes*, each fluorescent stripe to absorb the excitation light to emit light of a designated color (see Fig 3 and column 10, lines 48-67). It would have been obvious to one having ordinary skill in the art at the time the invention was made to use parallel stripes as taught by Okajima instead of dots in the device of Someya, with the predictable result of providing pixels comprising red, green, and blue.

Kaplan teaches a contrast enhancing layer positioned closer to a viewing position relative to the fluorescent layer, wherein the contrast enhancing layer comprises a plurality of different filtering areas that spatially match the fluorescent areas, where each filtering area transmits light of a color that is emitted by a corresponding matching fluorescent area and blocks light of other colors (see column 1, line 63-column 2, line 49). It would have been obvious to one having ordinary skill in the art to include a contrast enhancing layer as taught by Kaplan so that the fluorescent layer is placed at a position between the contrast enhancing layer (viewing side) and the first layer (side the

excitation light comes from), in the device of Someya as modified by Okazaki, Dubin, Kimura, Liu, Takuma, and Okajima, in order to improve the contrast of the display.

11. Claim 15 is rejected under 35 U.S.C. 103(a) as being unpatentable over Someya in view of Okazaki, Dubin, Kimura, Liu, and Takuma, as applied to claim 79 above, and further in view of Yamagishi (US Patent 6,771,419).

As to **claim 15**, Dubin teaches the Fresnel lens of claim 79, but does not teach the Fresnel lens is in a telecentric configuration for the incident excitation light. Yamagishi teaches a rear projection device wherein the Fresnel lens is in a telecentric configuration for incident projected light (see abstract). It would have been obvious to one having ordinary skill in the art at the time the invention was made to provide the Fresnel lens of Someya as modified by Okazaki, Dubin, Kimura, Liu, and Takuma, in a telecentric configuration for incident excitation light as taught by Yamagishi, in order to increase visibility without a decrease in light utilization efficiency (see abstract).

12. Claim 37 is rejected under 35 U.S.C. 103(a) as being unpatentable over Someya in view of Okazaki, Dubin, Kimura, Liu, and Takuma, as applied to claim 34 above, and further in view of Bottorf (US Patent 5,267,062).

As to **claim 37**, Someya, Okazaki, Dubin, Kimura, Liu, and Takuma teach the device as in claim 34, but do not teach each fluorescent region includes a boundary that is optically reflective. Bottorf teaches a fluorescent screen for emitting visible light when stimulated with UV light. Bottorf teaches each fluorescent region includes a boundary

that is optically reflective (see Fig 3 and column 3, lines 11-19). It would have been obvious to one having ordinary skill in the art at the time the invention was made to provide optically reflective boundaries as taught by Bottorf in the device of Someya as modified by Okazaki, Dubin, Kimura, Liu, and Takuma, in order to improve the efficiency of the UV source.

13. Claims 32, 33, 83, and 84 are rejected under 35 U.S.C. 103(a) as being unpatentable over Someya, in view of Okazaki, Dubin, Kimura, Liu, and Takuma, as applied to claim 79 above, and further in view of Johnson (US Patent 5,258,872).

As to **claims 32 and 83**, Kimura teaches the dielectric layers of claim 79, but does not teach the dielectric layers are polymeric materials. Johnson teaches an optical filter comprising a film of polymeric materials (see column 3, lines 2-13). It would have been obvious to one having ordinary skill in the art at the time the invention was made to make the dielectric layers of Kimura of polymeric materials as taught by Johnson, in order to reject the desired wavelength of light.

As to **claims 33 and 84**, Johnson teaches the dielectric layers are polyester materials (see column 3, lines 2-13).

Allowable Subject Matter

14. Claims 44 and 94 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

\Response to Arguments

15. Applicant's arguments with respect to claims 79 and 91 have been considered but are moot in view of the new ground(s) of rejection. In view of amendments the references of Dubin and Liu have been added for new grounds of rejection.

Conclusion

16. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Inquiry

Any inquiry concerning this communication or earlier communications from the examiner should be directed to ALLISON WALTHALL whose telephone number is (571)270-3571. The examiner can normally be reached on Mon-Fri 9:30-6:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Chanh Nguyen can be reached on (571)272-7772. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

anw
January 20, 2012

/CHANH NGUYEN/
Supervisory Patent Examiner, Art Unit 2629